WE CLAIM:

1. A fault interrupter module comprising:

an adapter module which includes electrical ground and line fault interrupter circuitry wherein said electrical ground and line fault interrupter circuitry includes:

at least one magnetic device capable of detecting a magnetic field from at least one fault current;

multiple conductive windings with a first and second outputs, said multiple conductive windings being magnetically coupled to said at least one magnetic device; and

a current interrupter circuit electrically connected to said multiple conductive windings, said current interrupter circuit being capable of detecting a ground fault signal from the first output of said multiple conductive windings and a line fault signal from the second output of said multiple conductive windings, said current interrupter circuit outputting an electronic fault signal when at least one of the ground and the line fault signals are detected.

2. The module of claim 1 further including at least one first electrical circuit module electromagnetically coupled with said electrical ground and line fault interrupter circuitry.

3. The module of claim 2 wherein said at least one first electrical circuit module includes at least one of a magnetically sensitive switch, a relay switch, a reed switch, and a circuit breaker.

4. The module of claim 2 wherein said at least one first electrical circuit module is in electrical communication with at least one second electrical circuit module through at least one electrical interconnect extending through said adapter module.

5. The module of claim 2 further including at least one second electrical circuit module, said at least one second electrical circuit module being in electrical communication with said at least one first electrical circuit module and external electronic circuitry.

6. The module of claim 5 wherein said at least one second electrical circuit module includes a relay socket.

7. The module of claim 2 wherein said at least one first electrical circuit module includes at least one conductive interconnect which extends through said at least one magnetic device.

8. A fault interrupter module comprising:

an adapter module which includes electrical ground and line fault interrupter circuitry wherein said electrical ground and line fault interrupter circuitry includes:

at least one magnetic core capable of detecting a magnetic field from at least one fault current;

multiple conductive windings with a first output and a second output, said multiple conductive windings being magnetically coupled to said at least one magnetic core;

a first sensing circuit with first and second inputs, the first input of said first sensing circuit being electrically connected to the first output of said multiple conductive windings and the second input of said first sensing circuit being electrically connected to the second output of said multiple conductive windings;

a second sensing circuit with first and second inputs, the first input of said second sensing circuit being electrically connected to the first output of said multiple conductive windings and the second input of said second sensing

circuit being electrically connected to the second output of said multiple conductive windings; and

a current interrupter circuit with an input and an output, the input of said current interrupter circuit being electrically connected to an output of said first sensing circuit and an output of said second sensing circuit, the output of said current interrupter circuit outputting an electronic fault signal to a switch when an electronic fault is detected.

9. The module of claim 8 wherein at least one of said first and second sensing circuits includes:

an impedence with a first terminal and a first opposed terminal, the first terminal of said impedence being electrically connected to at least one of the first and second outputs of said multiple conductive windings;

a rectifier with a second terminal and a second opposed terminal, the second terminal of said rectifier being electrically connected to the first opposed terminal of said impedence;

an electronic filter with a third terminal and a third opposed terminal, the third terminal of said electronic filter being electrically connected to the second opposed terminal of said rectifier; and

a comparator with a fourth terminal and a fourth opposed terminal, the fourth terminal of said comparator being electrically connected to the third opposed terminal of said electronic filter, the fourth opposed terminal of said comparator being electrically connected to the input of said current interrupter circuit.

10. The module of claim 8 wherein a three phase circuit is electromagnetically coupled to said electrical ground and line fault interrupter circuitry.

11. The module of claim 10 wherein said three phase circuit includes at least one switch capable of receiving the electronic fault signal.

12. The module of claim 11 wherein said three phase circuit is electrically connected to at least one load impedence through said at least one switch.

13. The module of claim 12 wherein said three phase circuit and said at least one load impedence are electrically connected through a conductive interconnect which extends through said at least one magnetic core, said conductive interconnect being electrically connected in series with said at least one switch.

14. The module of claim 8 wherein the output of said first sensing circuit is electrically connected to a first input of an OR gate and the output of said second sensing circuit is electrically connected to a second input of said OR gate wherein an output of said OR gate is electrically connected to the input of said current interrupter circuit.

15. A fault interrupter module comprising:

a socket in electrical communication with external electronic circuitry;

an adapter module which includes electrical fault indicator circuitry, and

a fault interruption circuit module capable of being plugged into said socket through said adapter module, wherein said adapter module includes at least one magnetic device capable of detecting an electrical fault in said at least one fault interruption circuit module.

16. The module of claim 15 wherein said external electronic circuitry is in electrical communication with at least one of a fuel pump circuit, an engine circuit, and a gas pump circuit.

17. The module of claim 15 wherein said external electronic circuitry is positioned proximate to a flammable material.

18. The module of claim 15 wherein said fault interruption circuit module includes at least one of an electronic relay in an airplane fuel system, a circuit breaker in an airplane fuel system, a relay in a fuel pump, and a circuit breaker in a fuel pump.

19. The module of claim 15 wherein said fault interruption circuit module is plugged into said socket through said adaptor module by a plurality of conductive pins which slidingly engage said socket.

20. The module of claim 19 wherein at least one conductive pin in the plurality of conductive pins extends through said at least one magnetic device.

21. The module of claim 15 wherein a switching device is in electrical communication with said at least one magnetic device.

22. The module of claim 21 wherein said switching device opens at least one electrical connection through said fault interruption circuit module when said electrical fault is detected by said at least one magnetic device.

23. A fault interrupter module comprising:

a relay socket module electrically connected to external electrical circuitry;

an adapter module fixedly attached to said relay socket module, said adapter module including electrical ground and line fault interrupter circuitry wherein said ground and line fault interrupter circuitry includes:

at least one magnetic core capable of detecting a magnetic field from at least one fault current;

multiple conductive windings with a first output and a second output, said multiple conductive windings being magnetically coupled to said at least one magnetic core;

a current interrupter circuit electrically connected to said multiple conductive windings, said current interrupter circuit being capable of detecting a ground fault from the first output of said multiple conductive windings and a line fault from the second output of said multiple conductive windings, said current interrupter circuit outputting an electronic fault signal when at least one of the ground and the line faults are detected; and

a relay module electromagnetically coupled with said electrical ground and line fault circuitry, said relay module being in electrical communication with said relay socket module through conductive interconnects extending through said at least one magnetic core, said relay module including a switch electrically activated by the electronic fault signal.

24. A method of detecting an electronic fault in a circuit, the method comprising the steps of:

detecting a magnetic field from a fault current flowing through a switch in said circuit,

converting said fault current into a ground fault signal and a line fault signal;

measuring the ground fault signal by comparing the ground fault signal to a ground fault reference signal;

measuring the line fault signal by comparing the line fault signal to a line fault reference signal;

opening said switch to create an open circuit when the ground fault signal is greater than or equal to the ground fault reference signal; and

opening said switch to create an open circuit when the line fault signal is greater than or equal to the line fault reference signal.

25. The method of claim 24 wherein said step of comparing the line fault signal to the line fault reference signal includes a step of measuring a voltage across an impedence.

26. The method of claim 24 wherein said steps of comparing the ground fault signal to the ground fault reference signal includes a step of measuring a voltage across an impedence.

27. The method of claim 24 wherein said step of opening said switch includes a step of flowing a ground fault current greater than one Amp through said switch.

28. The method of claim 24 wherein said step of opening said switch includes a step of flowing a line fault current greater than 90 Amps through said switch.

29, The method of claim 24 wherein said step of opening said switch includes a step of transmitting a fault signal to said switch.

30. The method of claim 24 wherein said step of detecting the magnetic field with said magnetic device includes a step of inducing a current in a magnetic core.

31. The method of claim 24 wherein said step of measuring the line and ground fault signals includes a step of rectifying at least one of the line and ground fault signals.

32. The method of claim 31 wherein said step of measuring the line and ground fault signals includes a step of filtering at least one of the line and ground fault signals.

33. A method of detecting an electronic fault in a circuit, the method comprising the steps of:

providing a three phase circuit electrically connected to an impedence load through at least one conductive interconnect and at least one switch;

measuring a current flowing through said at least one conductive interconnect to determine a ground fault signal and a line fault signal;

comparing the ground fault signal with a ground reference current and comparing the line fault signal with a line current; and

opening said switch to create an open circuit if the ground fault signal is greater than or equal to the ground reference current or if the line fault signal is greater than or equal to the line current.

34. The interrupter of claim 33 wherein said step of measuring the current flowing through said at least one conductive interconnect includes measuring a magnetic field with multiple conductive windings.

35. The method of claim 34, further including a step of choosing the ground and line currents by choosing a number of turns in said multiple conductive windings.

36. The method of claim 33 wherein said step of comparing the ground fault signal with the ground reference signal and the line fault signal to the line reference signal includes a step of measuring a voltage across an impedence.

37. The method of claim 33 wherein said step of opening said switch includes a step of transmitting a fault signal to said switch.

38. The method of claim 33 wherein said step of measuring the line and ground fault signals includes a step of rectifying at least one of the line and ground fault signals.

39. The method of claim 38 wherein said step of measuring the line and ground fault signals includes a step of filtering at least one of the line and ground fault signals.

40. The method of claim 39 wherein the step of filtering at least one of the line and ground fault signals includes a step of adjusting a frequency characteristic of an electronic filter to obtain a desired filter characteristic.

41. A method of providing electronic fault detection in a circuit, the method comprising the steps of:

providing at least one electrical circuit module in electrical communication with a connection in said circuit, said at least one first electrical circuit module including at least one electrical interconnect and at least one switch;

removing said at least one first electrical circuit module from said connection in said circuit;

providing an adapter module which includes electrical ground and line fault indicator circuitry, said adapter module being positioned in said connection in said circuit;

positioning said at least one electrical circuit module on said adapter module, said at least one electrical interconnect extending through said electrical ground and line fault indicator circuitry to make electrical contact with said circuit;

detecting a fault current flowing through said at least one first electrical circuit to said circuit;

transmitting a fault signal from said adapter module to said at least one switch; and

opening said at least one switch when the fault signal is detected by said at least one switch.

42. A fault interrupter module for a circuit with a switch, said fault interrupter module comprising:

means for detecting a fault current in said circuit;

means for converting the fault current into an electrical ground fault signal and an electrical line fault signal;

means for comparing the electrical ground fault signal to a ground fault reference;

means for generating a fault signal if the electrical ground fault signal is greater than or equal to the ground fault reference;

means for comparing the electrical line fault signal to a line fault reference;

means for generating the fault signal if the electrical line fault signal is greater than or equal to the line fault reference; and

means for transmitting the fault signal to said switch in said circuit, wherein said switch opens when the fault signal is detected.